

Listing of Claims

This listing of claims replaces all prior versions of the claims.

1-166. Cancelled.

167. (New) An isolated polynucleotide comprising a sequence encoding a polypeptide comprising amino acid residues 220 to 749 of SEQ ID NO: 2.

168. (New) The polynucleotide of claim 167, wherein the polypeptide comprises SEQ ID NO: 2.

169. (New) The polynucleotide of claim 167, wherein the polynucleotide comprises nucleotides 660 to 2250 of SEQ ID NO: 1.

170. (New) An isolated polynucleotide comprising a sequence encoding a polypeptide comprising the UDP-glucose binding domain of SEQ ID NO: 5.

171. (New) The polynucleotide of claim 170, wherein the polypeptide comprises SEQ ID NO: 5.

172. (New) The polynucleotide of claim 170, wherein the polynucleotide comprises nucleotides 2 to 3244 of SEQ ID NO: 4.

173. (New) A transgenic plant cell comprising an exogenous polynucleotide encoding a polypeptide comprising amino acid residues 220 to 749 of SEQ ID NO: 2.

174. (New) A plant comprising the cell of claim 173.

175. (New) The plant of claim 174, wherein the plant is a tree.

176. (New) A transgenic plant cell comprising an exogenous polynucleotide encoding a polypeptide comprising the UDP-glucose binding domain of SEQ ID NO: 5.

177. (New) A plant comprising the cell of claim 176.

178. (New) The plant of claim 177, wherein the plant is a tree.

179. (New) A vector comprising a polynucleotide comprising a sequence encoding a polypeptide comprising amino acid residues 220 to 749 of SEQ ID NO: 2, wherein the coding sequence is operably associated with a promoter sequence functional in a plant.

180. (New) A plant cell comprising the vector of claim 179.
181. (New) A vector comprising a polynucleotide sequence encoding a polypeptide comprising SEQ ID NO: 5, wherein the coding sequence is operably associated with a promoter sequence functional in a plant.
182. (New) A plant cell comprising the vector of claim 181.
183. (New) A method of producing a transgenic plant cell comprising expressing in the cell an exogenous polynucleotide comprising a sequence encoding a polypeptide consisting essentially of a UDP-glucose binding domain of a cellulose synthase.
184. (New) The method of claim 183, wherein the UDP-glucose binding domain is from a *Populus* cellulose synthase.
185. (New) The method of claim 184, wherein the *Populus* cellulose synthase is SEQ ID NO: 2.
186. (New) The method of claim 184, wherein the polypeptide consists essentially of an amino acid sequence corresponding to amino acid residues 220 to 749 of SEQ ID NO: 2.
187. (New) The method of claim 183, wherein the coding sequence is operably associated with a promoter.
188. (New) The method of claim 186, wherein the polynucleotide comprises nucleotides 660 to 2250 of SEQ ID NO: 1.
189. (New) The method of claim 183, wherein the UDP-glucose binding domain is from an *Arabidopsis* cellulose synthase.
190. (New) The method of claim 189, wherein the *Arabidopsis* cellulose synthase comprises SEQ ID NO: 5.
191. (New) The method of claim 183, wherein the polynucleotide is expressed in the sense orientation.
192. (New) The method of claim 183, wherein the polynucleotide is expressed in the anti-sense orientation.

193. (New) A method of producing a transgenic plant cell comprising expressing in the cell an exogenous polynucleotide encoding a polypeptide comprising amino acids 220 to 749 of SEQ ID NO: 2.
194. (New) The method of claim 193, wherein the polypeptide comprises SEQ ID NO: 2.
195. (New) The method of claim 193, wherein the polynucleotide comprises nucleotides 660 through 2250 of SEQ ID NO: 1.
196. (New) The method of claim 194, wherein the polynucleotide comprises nucleotides 69 through 3005 of SEQ ID NO: 1.
197. (New) The method of claim 193, wherein the polynucleotide comprises SEQ ID NO: 1.
198. (New) The method of claim 193, wherein the polynucleotide is expressed in the sense orientation.
199. (New) The method of claim 193, wherein the polynucleotide is expressed in the anti-sense orientation.
200. (New) A method of producing a transgenic plant cell comprising expressing in the cell an exogenous polynucleotide sequence encoding a polypeptide comprising SEQ ID NO: 5.
201. (New) The method of claim 200, wherein the polynucleotide sequence comprises nucleotides 2 to 3244 of SEQ ID NO: 4.
202. (New) The method of claim 200, wherein the polynucleotide is expressed in the sense orientation.
203. (New) The method of claim 200, wherein the polynucleotide is expressed in an anti-sense orientation.